

Notice of Allowability

Application No.

09/845,178

Examiner

Monique M Wills

Applicant(s)

LU ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the RCE filed 7/6/2004.
2. ☒ The allowed claim(s) is/are 1-19.
3. ☒ The drawings filed on 27 April 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance: the instant claims are allowable over the prior art of record, because the prior art is silent to a cathode composition for a lithium-ion battery having the formula $\text{Li}[\text{M}^1_{(1-x)}\text{Mn}_x]\text{O}_2$ where $0 < x < 0.5$ or $0.5 < x < 1$, and M^1 represents one or more metal elements, with the proviso that M^1 includes nickel, cobalt or a combination thereof, wherein all of the nickel has an oxidation state of +2 in air, all of the cobalt has an oxidation state of +3 in air, and all of the manganese has an oxidation state of +4 in air.

The prior art, such as Nitta et al. U.S. Patent 5,393,622, teaches a lithium manganese oxide cathodic material, but is silent to the oxide including nickel, cobalt or a combination thereof, where all of the nickel has an oxidation state of +2 in air, all of the cobalt has an oxidation state of +3 in air, and all of the manganese has an oxidation state of +4 in air. Therefore, the instant claims are patentably distinct from Nitta.

According to the interview with Dorothy Whelan conducted on September 24, 2004, Mrs. Whelan further explained that electrical neutrality is an inherent condition of every ceramic oxide. This position is supported by the excerpt in the seminal text in the ceramics area, *Introduction to Ceramics*, by Kingery, Bowen and Uhlmann (1976) included in the replay filed April 27, 2001. To satisfy the condition of electrical neutrality, the sum of the products of the stoichiometric subscripts and oxidation states of the elements forming the ceramic oxide must equal zero. Applying the requirement of charge neutrality to the composition of claim 1, having the formula $\text{Li}[\text{M}^1_{(1-x)}\text{Mn}_x]\text{O}_2$, where M^1 is nickel, cobalt or a

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combination thereof, requires the oxidation states of +2, +3 and +4 for Ni, Co and Mn, respectively. Therefore, charge neutrality required by all ceramic materials including that of claim 1, would require the instant oxidations states, as a result of the stoichiometric values and formula of the lithium manganese oxide of claim 1.

CONCLUSION

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (571) 272-1309. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Michael Barr, may be reached at 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MW

09/29/04



MICHAEL BARR
SUPERVISORY PATENT EXAMINER